

By Express Mail # EV273337845US

## CLAIMS

What is claimed is:

1           1.     A bridging clutch for installation in a hydrodynamic coupling device having  
2     a housing, a pump wheel, and a turbine wheel, said bridging clutch comprising:

3             a torsional vibration damper comprising a drive element for connecting to a drive  
4     shaft, a take-off element for connecting to a transmission input shaft, and a plurality of  
5     circumferential springs between said elements, each said element having openings for  
6     receiving said springs, each said element having at least one axial support area which  
7     is in contact with the at least one axial support area of the other said element for axially  
8     positioning the turbine wheel with respect to the housing;

9             at least one friction element and at least one friction surface for providing a  
10    working connection between said drive element and said drive shaft; and

11            a piston which can move axially between a first axial position, wherein said at  
12    least one friction element engages said at least one friction surface to make said  
13    working connection, and a second axial position, wherein said working connection is  
14    released.

1           2.     A bridging clutch as in claim 1 wherein one of said elements comprises a  
2    pair of cover plates, each said cover plate comprising at least one said axial support  
3    area, and the other of said elements comprises a hub disk having at least two opposed  
4    axial support areas, said hub disk being received between said cover plates.

By Express Mail # EV273337845(JS

1           3.     A bridging clutch as in claim 1 wherein at least one of said elements  
2 comprises axial stiffeners.

1           4.     A bridging clutch as in claim 3 wherein said axial stiffeners comprise at  
2 least one of set-offs and projections formed from a planar sheet.

1           5.     A bridging clutch as in claim 4 wherein said drive element comprises a  
2 pair of cover plates which are provided with said axial stiffeners.

1           6.     A bridging clutch as in claim 1 wherein at least one of said elements is  
2 heat treated to provide rigidity.

1           7.     A bridging clutch as in claim wherein the openings of at least one of said  
2 elements hold said circumferential springs essentially without radial play.

1           8.     A bridging clutch as in claim 1 wherein said circumferential springs are  
2 pre-curved with respect to the axis of said elements.

1           9.     A bridging clutch as in claim 8 wherein said circumferential springs are  
2 pre-curved at high temperature.

By Express Mail # EV273337845US

1           10.    A bridging clutch as in claim 1 comprising two said circumferential springs  
2   offset 180 degrees from each other.

1           11.    A bridging clutch as in claim 1 comprising a maximum of eight  
2   circumferential springs spaced apart by equal angular distances.

1           12.    A bridging clutch as in claim 1 comprising from three to six circumferential  
2   springs spaced apart by equal angular distances.

1           13.    A bridging clutch as in claim 1 wherein at least one of said elements has  
2   at least one pass-through opening.

1           14.    A bridging clutch as in claim 13 further comprising an assembly  
2   connection for connecting said drive element to said turbine wheel, said at least one  
3   pass-through opening being aligned with said assembly connection.

1           15.    A bridging clutch as in claim 2 further comprising an assembly connection  
2   fixed to one of said cover plates for connecting said drive element to said turbine wheel,  
3   the other one of said cover plates and said hub disk each having a pass-through  
4   opening aligned with said assembly connection.

By Express Mail # EV273337845US

1           16.    A bridging clutch as in claim 13 wherein said at least one pass-through  
2    opening acts as a flow connection between a pressure chamber adjacent to the piston  
3    and a hydrodynamic circuit.

1           17.    A bridging clutch as in claim 13 comprising a plurality of pass-through  
2    openings in each of said drive element and said take-off element, said pass-through  
3    openings in each said element being spaced apart by equal angular distances.

1           18.    A bridging clutch as in claim 13 further comprising a housing hub and a  
2    retaining element fixed to said housing hub, said piston being mounted non-rotatably  
3    but with freedom of axial movement to said retaining element, said retaining element  
4    having at least one pass-through opening aligned with said pass-through openings in  
5    said drive element and said take-off element.

1           19.    A bridging clutch as in claim 2 wherein said take-off element comprises a  
2    hub for centering the torsional vibration damper on the transmission input shaft, said  
3    hub carrying said hub disk.